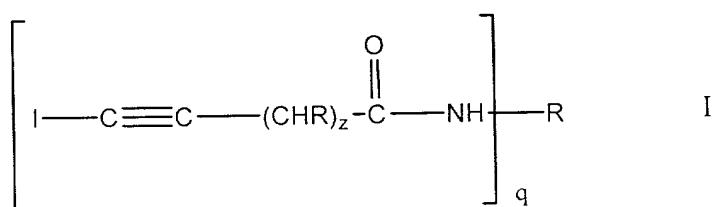


IN THE CLAIMS:

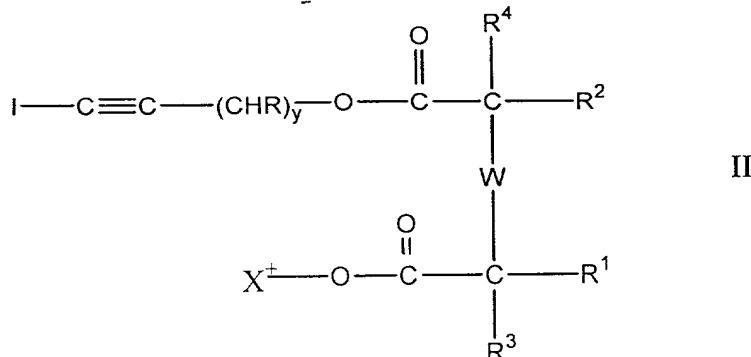
1 1. A composition comprising
2 (a) an iodine containing biocide; and
3 (b) (i) a ketone acid or salt thereof, (ii) an aromatic carboxylic acid or a salt
4 thereof, or (iii) a mixture thereof.

1 2. The composition of claim 1, wherein the iodine containing biocide is an
2 iodopropynyl derivative of the formula

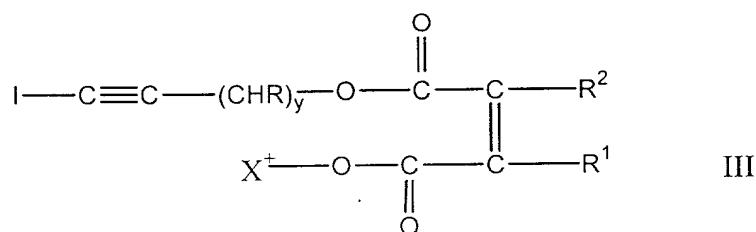


4 wherein R is hydrogen or a substituted or unsubstituted alkyl, aryl, or alkylaryl group having
5 from 1 to 20 carbon atoms; and z and q are independent integers from 1 to 3.

6 3. The composition of claim 1, wherein the iodine containing biocide is an
7 iodopropynyl derivative of the formula



or



wherein

R^1 and R^2 are defined as R^3 and R^4 below or are joined to form a cycloalkyl, cycloalkenyl, aromatic or a heterocyclic ring containing an oxygen, nitrogen or sulfur atom or an alkoxy, amino, carboxyl, halo, hydroxyl, keto or a thiocarboxyl-substituted derivative thereof:

R³ and R⁴ are independently selected from (A) hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, a heterocyclic ring containing an oxygen, nitrogen or sulfur atom, alkoxy, amino, carboxyl, halo, hydroxyl, keto or a thiocarboxyl and (B) substituted derivatives of the alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl and the heterocyclic ring wherein the substitutions are alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, alkoxy, amino, carboxyl, halo, hydroxyl, keto or a thiocarboxyl; y is 0 to 16; W may be a single bond, oxygen, NR⁵, or (CR⁶R⁷)_p, wherein R⁵ is hydrogen, alkyl, aminoalkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl or a heterocyclic ring containing an oxygen, nitrogen or sulfur atom or a substituted derivative of alkyl, cycloalkyl, alkenyl, cycloalkenyl or aryl groups wherein the substitutions are alkyl,

30 cycloalkyl, alkenyl, cycloalkenyl, aryl, alkoxy, amino, carboxyl, halo, hydroxyl, keto, or a
31 thiocarboxyl wherein R⁶ and R⁷ are defined as R³ and R⁴ above and p is an integer from 1 to
32 12; and wherein the heterocyclic rings comprise from 5 to 8 members, the alkyl or cycloalkyl
33 groups from 1 to 18 atoms, the alkenyl or cycloalkenyl groups from 2 to 18 carbon atoms, and
34 the aryl groups from 6 to 10 members.

1 4. The composition of claim 2, wherein the iodopropynyl derivative is a 3-iodo-2-
2 propynyl derivative.

1 5. The composition of claim 4, wherein the 3-iodo-2-propynyl derivative is 3-
2 iodo-2-propynyl butyl carbamate, 3-iodo-2-propynyl succinate or p-chlorophenyl-3-
3 iodopropynyl formal.

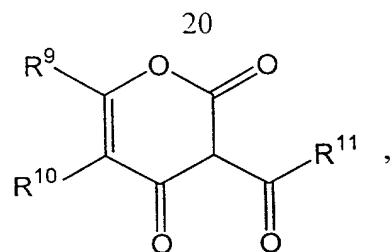
4 6. The composition of claim 5, the 3-iodo-2-propynyl derivative is 3-iodo-2-
5 propynyl butyl carbamate.

6 7. The composition of claim 1, wherein the iodine containing biocide is
7 encapsulated in cyclodextrin.

8 8. The composition of claim 10, wherein the 3-iodo-2-propynyl butyl carbamate
9 is encapsulated in cyclodextrin.

10 9. The composition of claim 1, wherein the ketone acid is a cyclic ketone acid or
11 a salt thereof.

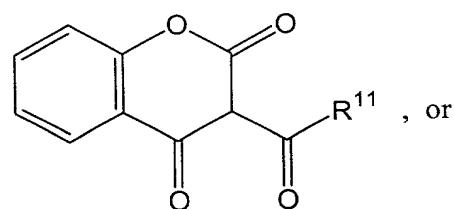
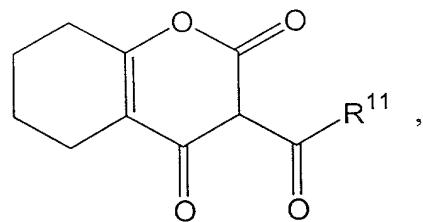
12 10. The composition of claim 9, wherein the cyclic ketone acid has the formula



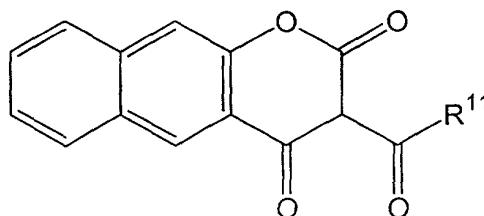
wherein R⁹, R¹⁰, and R¹¹ are independently C₁-C₁₀ alkyl, C₁-C₁₀ alkenyl, C₁-C₁₀ alkynyl, aryl, aryl substituted with halogen, or (C₁-C₁₀ alkyl)aryl.

11. The composition of claim 10, wherein R⁹, R¹⁰, and R¹¹ are independently C₁-C₄ alkyl; or R⁹ and R¹⁰ form a 5-12 member ring.

12. The composition of claim 10, wherein the cyclic ketone acid has the formula



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1 13. The composition of claim 9, wherein the ketone acid is dehydroacetic acid or
2 a salt thereof.

14. The composition of claim 1, wherein the ketone acid is sodium dehydroacetate.

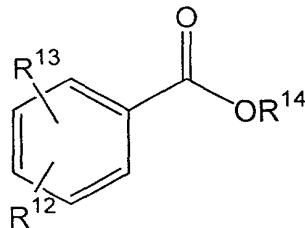
15. The composition of claim 1, wherein the ketone acid is encapsulated.

16. The composition of claim 13, wherein the dehydroacetic acid or salt thereof
is encapsulated in cyclodextrin.

1 17. The composition of claim 1, wherein the iodine containing biocide is
2 iodopropynyl butylcarbamate and the ketone acid is dehydroacetic acid or a salt thereof.

1 18. The composition of claim 1, wherein the aromatic carboxylic acid is benzoic
2 acid, derivative thereof, or salt thereof.

1 19. The composition of claim 1, wherein the aromatic carboxylic acid has the
2 formula



wherein R¹² and R¹³ are independently H, -OH, or -OC(O)CH₃; and R¹⁴ is H, Na, K, Ca, or Mg.

20. The composition of claim 1, wherein the aromatic carboxylic acid is a hydroxy benzoic acid, derivative thereof, or salt thereof.

21. The composition of claim 20, wherein the hydroxy benzoic acid is salicylic acid or a salt thereof.

22. The composition of claim 21, wherein the salt of salicylic acid is sodium salicylate.

23. The composition of claim 1, wherein the iodine containing biocide is iodopropynyl butylcarbamate and the aromatic carboxylic acid is sodium salicylate.

24. The composition of claim 1, further comprising a solvent.

25. The composition of claim 24, wherein the solvent is water, an alcohol, a glycol, an ester, an ether, a polyether or any combination of any of the foregoing.

26. The composition of claim 24, wherein the solvent comprises water and alcohol.

1 27. The composition of claim 24, wherein the alcohol is phenoxyethanol.

1 28. The composition of claim 1, wherein the composition comprises a biocidally
2 effective amount of the iodine containing biocide.

1 29. The composition of claim 1, wherein the composition comprises a fungicidally
2 effective amount of the iodine containing biocide.

1 30. The composition of claim 1, wherein the weight ratio of the ketone acid to the
2 iodine containing biocide ranges from about 0.0006:1 to about 1990:1.

1 31. The composition of claim 30, wherein the weight ratio of the ketone acid to
2 the iodine containing biocide ranges from about 0.0063:1 to about 1400:1.

1 32. The composition of claim 1, wherein said composition is a use dilution
2 comprising from about 0.00005 to about 0.4975% by weight of ketone acid and from about
3 0.00005 to about 0.40% by weight of iodine containing biocide, based upon 100% weight of
4 total composition.

1 33. The composition of claim 32, wherein said composition is a use dilution
2 comprising from about 0.0005 to about 0.35% by weight of ketone acid and from about
3 0.0005 to about 0.15% by weight of iodine containing biocide, based upon 100% weight of
4 total composition.

1 34. The composition of claim 1, wherein the weight ratio of the aromatic
2 carboxylic acid to the iodine containing biocide ranges from about 0.0006:1 to about 1990:1.

1 35. The composition of claim 34, wherein the weight ratio of the aromatic
2 carboxylic acid to the iodine containing biocide ranges from about 0.0063:1 to about 1400:1.

1 36. The composition of claim 1, wherein said composition is a use dilution
2 comprising from about 0.00005 to about 0.4975% by weight of aromatic carboxylic acid and
3 from about 0.00005 to about 0.40% by weight of iodine containing biocide, based upon 100%
4 weight of total composition.

1 37. The composition of claim 36, wherein said composition is a use dilution
2 comprising from about 0.0005 to about 0.35% by weight of aromatic carboxylic acid and from
3 about 0.0005 to about 0.15% by weight of iodine containing biocide, based upon 100% weight
4 of total composition.

1 38. An antimicrobial composition comprising a synergistic mixture of:

- 2 (a) dehydroacetic acid or a salt thereof; and
- 3 (b) 3-iodo-2-propynyl butyl carbamate.

1 39. An antimicrobial composition comprising a synergistic mixture of:

- 2 (a) salicylic acid or a salt thereof; and
- 3 (b) 3-iodo-2-propynyl butyl carbamate.

1 40. An antimicrobial composition comprising a synergistic mixture of:

- 2 (a) dehydroacetic acid or a salt thereof;
- 3 (b) salicylic acid or a salt thereof; and
- 4 (c) 3-iodo-2-propynyl butyl carbamate.

1 41. A method of inhibiting the growth of microorganisms comprising applying an
2 effective amount of the composition of claim 1.